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ABSTRACT

The Structure of Intellect (SOI) learning abilities test and curriculum emphasize teaching that promotes individualized learning and divergent thinking and recognize special problems in identifying underachievers, minority gifted students, and differing abilities in boys and girls. The model addresses these variations by taking the view that cognitive growth can be directly and systematically fostered. Guilford's model of intellect, composed of operations, content, and products, is adapted to the SOI model which is a factor analytic approach defining a proliferation of behaviors in 17 subtests. More information about more abilities is more finely drawn. Templates are used to categorize major IQ tests into SOI categories; correlation studies are used to investigate SOI validity. Foundational abilities and enabling skills in reading; and abilities in arithmetic, mathematics, writing readiness, and creativity are measured. The test's particular value is as a "more information" source in making decisions where prior information is incomplete, and SOI provides profiles of children who have been difficult to assess. The SOI test and curriculum model is a remediation system identifying strengths as tools for improving disabling areas. SOI is largely associated with gifted education but can positively affect the general classroom. SOI planning, training, and implementation must consider start-up time, staffing, and cost factor alternatives. (CM)

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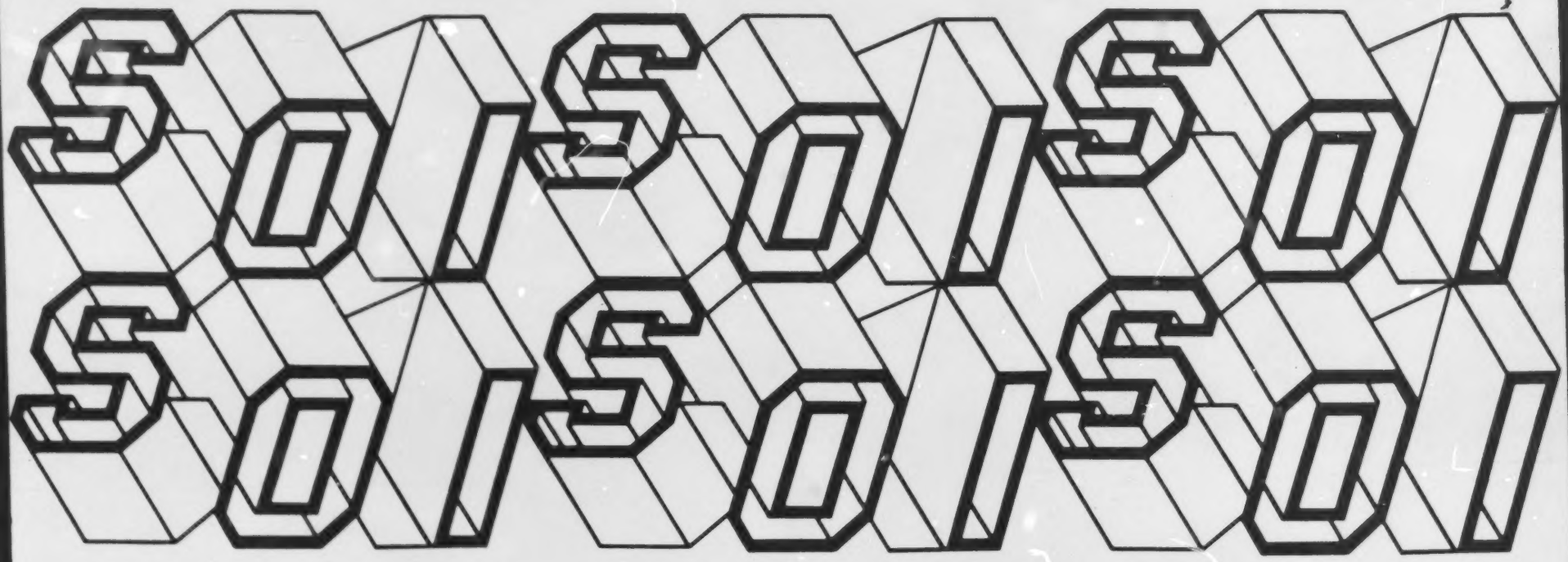

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A Discussion of the Structure of Intellect Test and Curriculum Model

by Sandra Scofield

SOUTHERN OREGON

RESEARCH AND DEVELOPMENT COMMITTEE

presents:

A DISCUSSION OF THE STRUCTURE OF INTELLECT TEST AND CURRICULUM MODEL

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by

Sandra J. Scofield, Ph.D.

April 1982

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EDUCATION SERVICE DISTRICT

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TABLE OF CONTENTS

Foreword by SORD v

Putting SOI Into the Context of a Total Gifted Program 1

Placing SOI, Yes or No, Into a Decision Model 1

Introducing. . .The One! The Only! 3

Factors to Consider Before a Decision to Use or Not Use SOI 3

Structure of Intellect: From Psychology to Education 4

The SOI Learning Abilities Test 5

Norms 6

Reliability 7

Validity 8

Using the Test 13

For Prediction 13

The SOI-Based Curriculum 16

What to Expect: Deriving Reasonable Goals from the Test 16

The Rationale for and Against a Learning-Abilities Approach to Intervention 17

The Appropriateness of SOI for Target Groups 18

Examining the Claims 21

Implementing the Curriculum 22

Planning the Instruction 22

Who and Where 24

Training the Teachers 24

Factors Influencing Success 25

Start Up Time 26

Staffing 26

Factors Influencing Cost 28
One Classroom--"Rock-Bottom" Estimate 29
Some Factors in Cost Estimates 30
Some Alternatives to Buying the Whole Loaf 31
Putting SOI Into the Context of a Total Gifted Program 34
Exploring Philosophy 34
Models of Service to Gifted Children 36
Last Words 39
Resources 40
Southern Oregon 40
Other 42
Bibliography 43

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FOREWORD BY SORD

Because of a widespread interest in SOI in the southern Oregon region, SOUTHERN OREGON RESEARCH AND DEVELOPMENT COMMITTEE (SORD) determined that additional information about tests and curriculum materials would be useful as districts considered SOI implementation. At the time of research several districts had already begun to use tests and curriculum materials, others were planning SOI use, and still others were debating or questioning SOI's value. In such a setting of intense interest, SORD felt that specific guidelines would be helpful to local district decision-makers.

Any reader of this paper will find a wealth of information about gifted education, as well as SOI specifically. For the decisionmaker faced with the SOI question, exceptionally valuable questions and suggestions appear on the first two pages. If the suggestions are followed, the SOI decision should be much easier.

Dr. Sandra Scofield was selected by SORD as the researcher because of her record of significant contributions to the educational community, her researching skills, and her objectivity. She had not been trained in SOI techniques so brought no bias for or against the materials as she began the project. Readers will find that Dr. Scofield has good things to say about SOI. She also has words of caution. And she presents specific guidelines for materials selection that will be helpful in determining appropriateness of ANY assessment instrument or curriculum materials.

In preparing the paper, Dr. Scofield studied information provided by the

SOI Institute in California, she conducted searches through SMERC and ERIC, and she spent a significant amount of time interviewing teachers using SOI, administrators and school psychologists. She also obtained curriculum materials from several districts and examined in detail the SOI test and test manual.

Dr. Scofield brings her own interests and experience to the research and writing tasks. Her graduate training is in curriculum and instruction with special emphases in reading, language arts, and learning disabilities. She has taught, developed curriculum, and conducted inservice activities at elementary, secondary, and college levels. Her varied experiences bring real meaning to this paper, which the reader will find goes far beyond a review of significant literature related to SOI.

This paper should not be read as a scholarly critique, but as an attempt to provide practical information to districts. In keeping with Dr. Scofield's intention, she has maintained an informal approach in the writing. The casual reader may wish to skim the paper, reading the italicized remarks that head each section, and noting underlined statements.

Dr. Scofield does not purport to provide the final answer in discussing so new and complex a model as SOI for testing and teaching; she and SORD will feel that the project has met its goal if it creates interest, stirs debate, raises questions, and assists districts in making important decisions about their talented and gifted programs.

SORD is a program offered by Jackson County Education Service District. Its members are drawn from local districts, private schools, and post-secondary institutions in southern Oregon.

PLACING SOI, YES OR NO, INTO A DECISION MODEL

What are you including in the "gifted program"? And how will you identify students?

- Academically Superior
- High Intelligence

▼

Consider SOI among other possibilities.

- Leadership
- Physical Superiority
- Artistic Talent
- Mechanical Ability

▼

SOI not appropriate; how will you serve? What proportion of resources go here?

▼

Examine other means of assessment.

What are the existing strengths and weaknesses of your regular program in serving academically gifted?

- Individual needs not yet being met, perhaps not even known

▼

Consider SOI among other possibilities

- Individualized
- Diverse opportunities
- Utilizing acceleration and/or enrichment in a planned program

▼

You may not need SOI.

What training in teaching gifted children have your teachers had?

- Little or none

▼

Consider SOI among other kinds of training.

- Emphatic, generous

▼

You may not need SOI.

Do you believe special materials or programs other than regular curricula are needed for gifted children?

- Yes ▼

  Consider SOI among other providers of materials.

- No ▼

  Consider inservice to help teachers recognize giftedness, special qualities; help them in modifying and enriching in the regular classroom.

What kinds of experiences or materials should academically gifted students have?

Special skills and process training

▼

Consider SOI among other possibilities.

- Mentor relationships
- Exploratory experiences
- Acceleration in subject areas of superiority, e.g., math
- Problem-solving ("real" problem) experiences

▼

SOI will not meet these needs; consider other programs, models, etc.

IF YOUR NEEDS POINT TO A POSSIBLE USE OF SOI, THEN. . .

First select a small committee to review background material in order to raise questions or concerns and determine interest and compatibility with district philosophy.

If interested, then. . .

Visit at least one SOI site and seek opportunities to talk with teachers and administrators.

▼

If still interested, then. . .

Bring in a trained person to explain the program and answer your questions in an informal setting--not a workshop.

▼

If still interested, then. . .

Involve more people in an awareness workshop, pulling from teacher and administrative pools; seek feedback.

▼

If still interested, then. . .

Determine available resources.

If use seems feasible. . .

Determine scope of a PILOT (e.g., one school, or a cadre of teachers across several schools).

If PILOT sustains/increases enthusiasm. . .

Develop plans for IMPLEMENTATION and EVALUATION, putting SOI into the context of a TOTAL TALENTED AND GIFTED PROGRAM, allocating resources equitably.

INTRODUCING. . . THE ONE! THE ONLY!

As one reads the lectures and articles of Dr. Mary Meeker, it is easy to feel the tremendous appeal of the SOI model.

Dr. Meeker, the designer of Structure of Intellect test and materials, speaks the language of the "gifted teacher." She emphasizes teaching in a way that promotes individualized learning and divergent thinking. She recognizes the stages of growth in children, particularly as described by Piaget. Further, she presents a view of intelligence that seems to have viable curricular implications. She recognizes special problems in identifying underachievers, minority gifted, and differing abilities in boys and girls. Her model, she asserts, addresses these needs. The model is based on a view of intelligence that is "upbeat": it says that cognitive growth can be directly and systematically fostered.

FACTORS TO CONSIDER BEFORE A DECISION TO USE OR NOT USE SOI

Before selecting or rejecting SOI testing and curriculum, a district should consider:

1. *The strength of the model as a model of intelligence, and its implications for pedagogy.*
2. *The theoretical and empirical bases for its use in gifted, regular, or special education.*
3. *The scope of the district's own program and its locally developed, locally supported goals and philosophy--and then the compatibility of SOI with these factors.*
4. *Available resources, and the interest of district personnel.*

The discussion that follows should help in assessing the model and should suggest factors to consider in relating it to district needs.

STRUCTURE OF INTELLECT: FROM PSYCHOLOGY TO EDUCATION

> *In 1967, Guilford postulated a view of intellect composed of operations, products, and content. Operations are basic intellectual processes of thinking used by individuals: cognition, memory, divergent production, convergent production, and evaluation. Content refers to the type of material or content on which operations are performed. Products are the results of performing operations on content. Theoretically, each "cube" or interaction of the three components, can be tested and taught. Among psychologists, this appears to remain a matter of conjecture and investigation.*

Meeker, a student of Guilford, saw the educational implications of Guilford's model and worked for several years to adapt the testing to children, proposing teaching competencies and curriculum to support the model.

The SOI model of intelligence is a factor analytic approach, rather than the hierarchal approach of the WISC-R which has two broad group factors with subdivisions. Although SOI defines a proliferation of behaviors, Guilford, and subsequently Meeker, did not deviate radically from the prevailing ways of testing. Many of the seventeen SOI subtests look familiar to the school psychologist. Backwards digits, verbal and symbolic analogies, pattern completions: none of these are unique to any one test. SOI, however, has the broadest range of sampling (subtests), though not necessarily the broadest sample within a subtest domain.

Meeker's argument is that SOI's fractionated view of intelligence is more

valuable than others because it provides differentiated profiles--more information about more abilities, more finely drawn.

Meeker modeled the abilities that appear to be sampled by the Binet and WISC-R, operationally defining the behaviors as learning abilities. Thus she could, in turn, seek validation of SOI by placing it in relation to the major IQ tests. She developed templates that are designed to help the psychologist categorize IQ subscales into SOI categories. Her system is worth working through at least once in order to understand her view of the relationship. However, that relationship represents her analysis, and there is some indication that other psychologists do not necessarily see it the same way. Nineteen school psychologists were asked to assign the 142 items of a Stanford-Binet Intelligence Scale to the five Operations categories of SOI, using a Meeker flowchart. This resulted in low rater agreement, not only with Meeker but among the psychologists as well. The authors (Dyer et al.) concluded that the results do not justify such a classification. This does not mean that the SOI test does not correlate with other kinds of intelligence tests. It indicates that the best way to interpret a child's performance by SOI categories is to use the SOI test.

THE SOI LEARNING ABILITIES TEST

The technical data manual does not provide full information regarding the test's norming, reliability, or validity, and as a manual is not up to APA standards. It appears that the test's reliability is low. Validity is not discussed; the manual implies

that the test is validated by the research on which it is based. Standardization is affected by possible differences in administering the test.

NORMS

A technical data manual is available from the SOI Institute. In some ways it is frustrating reading. The population is adequate in size, but the manual does not describe the population otherwise, except to provide the names of the districts. The manual describes the test-retest procedures but does not describe those who gave the test (trained SOI people? teachers?) This is probably consistent with the intention stated in the test manual, that any teacher can give the test by following the manual. However, the test is different from most standardized tests in that it allows or even encourages "flexibility" in administration. In fact, in the cassette tape which may be used to give the test, there are some variations from the manual in one or two subtests: a little more help, a bit more encouragement. This would probably be of serious concern to a researcher. A teacher might not be concerned, arguing that if the test is being used diagnostically, it is most useful if children perform at their best. Since it is such a novel test, fewer children might be "lost" if enough time were spent with instructions and examples. On the other hand, the test may, in part, be testing the ability of a child to adapt to novel tasks, which may be part of being "gifted." If methods of administration are inconsistent, results may be difficult to analyze.

To lessen the chance of discrepancies caused by differences in test administration, orientation should be provided for those

giving tests, training to include guidelines for establishing an appropriate level of relaxation in students. District administrators should assume the responsibility of assuring that the test is given only by trained professionals. Scoring is less of a problem; there is even a template available. Only the tests of divergent production need be scored by trained personnel.

Note that the test is not appropriate below grade 2, nor above grade 6, since that was the norming population. There is a Process and Diagnostic Test available for K-3 which is being normed now; information should be available by summer 1982. Information regarding the Career and Vocational Form was not mentioned in the technical manual. The manual does not explain use of the test with secondary students and adults. Forms for screening in arithmetic, and a gifted screening form were created by selecting those subtests that had the greatest strength in predicting achievement or IQ. The reading readiness form for primary age children is apparently not normed, though one assumes those subtests were selected because of believed strength of prediction of those abilities for reading achievement, since Meeker has discussed these relationships elsewhere.

RELIABILITY

The manual provides tables that include test-retest coefficients. These vary, for subtests, from lows in the .20s to a very few above .90. To understand what this means, Salvia and Ysseldyke's recommendations for standards of reliability are helpful.

1. Group data. If the scores are to be used for administrative purposes,

reported by groups, they recommend a minimum reliability of .60. The test comes near this on some subtests and it exceeds it on some--but this is not the use to which the test is put.

2. Individual data. When a screening decision (e.g., referring the child for other assessment such as perceputal testing or IQ testing) is to be made, a .80 standard is recommended. For placement (as in a gifted program or a learning disabilities program), a .90 is recommended. The SOI-LA certainly does not meet these standards. Nonetheless, it is fair to note that Salvia and Ysseldyke question the reliability data of the Stanford-Binet as well, because it is inadequately described.

VALIDITY

It appears that Meeker is assuming that someone considering the test would be familiar with Guilford's model and her own work, and accept the test on that basis. There is some strength to that argument--the strength of the model. However, the reference to a list of studies (page 4 of the manual) is a bit bothersome, for she says that "The subtests were selected . . . for their established relationship to school learning, particularly reading, arithmetic, writing, and creativity." (A complete critique of these studies is more than can be managed in the scope of this paper, and the author is not claiming to have read all relevant literature, but wonders why Meeker lists those studies to support that statement). The relationship of SOI and reading, writing, and creativity are not well supported or even very well discussed in those particular articles. The cited studies certainly don't focus on all of the components of the test, not even when

taken as a composite. Why were these particular studies cited, rather than a general reference being made to studies done and collected elsewhere? The meticulous reader would find it interesting to read of correlations of certain SOI abilities and the PIAT scores of educationally handicapped junior high school students. These correlations might be questioned, since the test was normed for grade school students. Uncontrolled evaluations lead to questions concerning validity. However enthusiastic the many testimonials to the test and curriculum may be, they are not useful in assessing the test's validity.

Abstracts are available from the Institute. Their Research Studies are very abbreviated, so it is difficult to judge their quality. To evaluate them fairly the investigator would need to order the original reports.

> *A collection of the studies covering validation procedures is also available, for $10.50. It is titled Collected Readings, Volume I. It is highly recommended that this collection be read by someone in a district considering using SOI. At a minimum, someone should read the studies cited in the technical manual. They are all available in journals or ERIC, except for the dissertations.*

Taking a different approach, one can learn much about the test by taking it. The SOI test definitions make very interesting--and very rational--reading. Some are immediately recognizable as "being what they seem to be." For example, N3I--Convergent Production of Symbolic Implications--requires substitutions of equivalencies to arrive at answers to equations using symbols other than letters or numbers. It is cited as an indicator of

readiness for algebra, and one quickly sees that the test-taker is in fact performing what amounts to algebraic operations on a very simple level. The memory tests can be best understood if the reader realizes that:

1. They are tests of ability to organize information for storage and retrieval, and are tests of short-term memory.
2. Guilford considered ability for retrieval of stored information to be tested in other operations.
3. Long-term memory appears to parallel short-term memory, but it is not the same.

Meeker recognizes that memory is not a global ability. Meeker and Meyers, investigating the way different memory tests and school achievement correlate, found that memory was differentiated by mode of input, and that a student may be strong in some kinds of memory but not others. Meeker also found that auditory memory was correlated to arithmetic achievement, and visual memory to spelling. The latter relationship is well documented in language arts literature and is believed strongly by this researcher. For example, some children appear to be "natural spellers" in early grades--spelling well without studying. Teachers of such children probably will see children profit more from reading or doing vocabulary work than from completing work assigned from above-grade-level spellers. Learning to spell for these children seems to grow from seeing the words and using them in context.

A question must also be asked whether the test tests at the level of particular abilities, or whether it tests general ability to learn. Does the

whole picture the test reveals really show whether a child is capable, disabled, gifted? Since the test is being used widely with gifted programs, it would be interesting to see studies with this particular population that told something about the range of abilities and the kinds of patterns found in this population. Conversely, a broad sampling of learning disabled children, with a discussion of their profiles on the SOI and their achievement profiles, would be of considerable interest. But only very small scale studies have been done so far.

The most convincing work is in the area of arithmetic and mathematics, i.e., Meeker's article, "The Relevance of Arithmetic Testing to Teaching Arithmetic Skills." The subtests of interest are well related to Piagetian constructs. Thompson and others, in a study of the relationship of SOI and the Iowa Test of Basic Skills, found the seventeen SOI ability scores hypothesized to be related to arithmetic achievement to be substantially (R-.83) correlated. In the same study, however, reading was found to be only moderately correlated (R-.59), which, following the earlier discussion about reliability, does not seem adequate for diagnostic prescription.

A very thorough SOI evaluation was completed by Northwest Regional Educational Laboratory's Technical Assistance Program for the Sherwood, Oregon, public schools. The total SOI raw score and total battery standard score of the California Achievement Test were observed to be correlated .72, indicating, in the words of the evaluator, "moderately strong concurrent validity with students' general achievement." A total score-to-score correlation like this seems to validate the test as a predictor of achievement, but this should not be interpreted as validating the test as a

diagnostic tool, where subtests imply instructional interventions.

The SOI test makes some attempt to measure creativity, defined as "divergent production." One study that tested groups of adults who were students in art, music, English, and general studies, concluded that the content categories of the DP plane of the Guilford SI model are valid constructs and are predictive of creative ability. The study was done with adults, with subtests other than those on the SOI-LA test. The author, Zegas, cautions that divergent production is only one element in creative endeavor.

Testing creativity is problematical, even if it is reasonably defined as divergent thinking (fluency and flexibility). Attempts to validate tests of creativity by correlating them with ratings of teachers or supervisors (e.g., Piers, Daniels, and Quackenbush) have been disappointing. Part of the problem is that the test situation does not allow consideration of factors like intensity of effort, motivation and persistence, the effect of "incubation," curiosity, and those magical qualities yet to be defined. At least, the SOI test does recognize creativity as a factor of intelligence.

There is considerable challenge to the idea of training for divergent thinking at all, especially with handicapped children. Studies tend to show growth on criteria like the test and exercises, but it is difficult to show growth in any real context. The SOI curriculum consists of exercises, mostly in fluency, and many consist of producing novel responses. This is not a great deal like "real creativity" where one uses, not just has ideas. Farnham-Diggory suggests that "practice in generating ideas

relevant to a creative enterprise of importance to the student would be the best creativity training." Certainly a call for creative teaching! Supporters of the SOI test will point to its uniqueness (defining intelligence factorially) and its pragmatism (implications for instruction). Unfortunately, data do not seem to support its use as a standardized test.

The test may be administered to groups, taking from five to eight hours of administrator's time for intermediate grades. Younger children, however, do better in smaller groups and can take fewer subtests at one sitting. An estimate of twenty hours of administrator's time at primary levels therefore seems more in tune with users' experience.

USING THE TEST

FOR PREDICTION

Only limited research has been done to determine which SOI data are most useful for identification purposes. Meeker relates factored abilities to particular areas of achievement as follows:

READING (Foundational abilities)

CFU - Visual closure
CFC - Visual conceptualization
EFU - Visual discrimination
EFC - Judging similarities and matching of concepts
MSU (visual) - Visual attending
MSS (visual) - Visual concentration for sequencing

READING (Enabling skills)

CMU - Vocabulary of math and verbal concepts
CMR - Comprehension of verbal relations
CMS - Ability to comprehend extended verbal information
MFU - Visual memory for details
NST - Speed of word recognition

ARITHMETIC

CSS - Comprehension of numerical progressions
MSU (auditory) - Auditory attending
MSS (auditory) - Auditory sequencing
ESC - Judgment of arithmetic similarities
ESS - Judgment of correctness of numerical facts
NSS - Application of math facts

MATHEMATICS

CFS - Constancy of objects in space (Piaget)
CFT - Spatial conservation (Piaget)
CSR - Comprehension of abstract relations
MSI - Inferential memory
NSI - Form reasoning (logic)

WRITING

NFU - Psycho-motor readiness

CREATIVITY

DFU - Creativity with things (figural - spatial)
DSR - Creativity with math facts (symbolic)
DMU - Creativity with words and ideas (semantic - verbal)

The strength of the relationships vary, however, and are more logically-derived than empirically-based at this time. The research continues as the test is used more.

In an interesting study of the use of SOI for prediction, Cunningham and others investigated the relationship of SOI abilities and teacher perceptions of gifted children. Cognition functions and Divergent Production factors made strong contributions to predicting teacher perceptions of students as gifted achievers. The ability NSS, Convergent Production of Symbolic Systems, was also significantly linked. Interestingly, the power of the predictions varied across Blacks, Mexican American students, and "others."

Meeker suggests using the SOI test or gifted screening form to select students for gifted programs. As in any screening or identification process, care should be taken to assure that no single assessment instrument is used to define a student's strengths or weaknesses. The relatively low reliability of SOI,

and the fact that it is still in a stage of trial should alert educators to the need for student information beyond that provided by SOI.

Because the SOI test provides an array of scores, proponents argue that a child whose IQ score is depressed by a few low areas can be identified as gifted if other areas are high. Furthermore, achievement tests may reflect underachievement in some gifted children.

If SOI were used in conjunction with IQ scores, achievement tests, or other ability tests, a district could lower its cutoff scores in an attempt to identify children like those just discussed, if such an effort seemed worth the cost.

The teacher's manual, Using SOI Test Results, is very specific and helpful in interpreting results. However, a note of caution is appropriate. Meeker suggests the use of certain scores for placement in advanced English and social studies. By the time such a decision were to be made (probably junior high level), there would likely be more appropriate data: actual samples of writing, grades, teacher referrals, and achievement test scores. The English field, for example, has amply illustrated the efficacy of "holistic scoring" of actual work samples for writing samples. In mathematics, Holly and Michael investigated the use of SOI as a predictor of algebra achievement, concluding that SOI factor tests were more efficient than math achievement tests. SOI might "pick up" some underachievers who would demonstrate ability in preskills for geometry and algebra which could have been overlooked in elementary math curriculum.

There is a reading readiness form, although there is no information about norming it for young children. The test does sample skills like visual closure, reading related vocabulary (e.g., under, over), general vocabulary, visual discrimination, etc. Assessment with this instrument would probably identify children with low readiness skills, or at least those who have trouble with paper and pencil tasks, attending, and following directions (since those are imbedded in taking the test), though the test would not yield sufficient data for placement in special programs, or even in "the low group." It would merely alert the teacher to take a closer look at certain youngsters.

The SOI test seems to have particular value as a "more information" source in making decisions where prior information is ambiguous or incomplete. It also seems helpful in understanding better the profiles of children who have been difficult to describe or assess. It seems especially valuable as a help in identifying the likely-to-be-overlooked complex child. A district interested in any of these uses should plan to study the relationships between factors and the uses to which scores are put, over a period of a year or more, or else wait for better information from studies by those who are using SOI.

THE SOI-BASED CURRICULUM

WHAT TO EXPECT: DERIVING REASONABLE GOALS FROM THE TEST

The SOI test is a "process" test, that is, an assessment of perceptual and psycholinguistic abilities that underly or contri-

bute to academic performance. Thus, using this test as a diagnostic tool, one would derive objectives aimed at improving those abilities tested, such as Cognition of Figural Systems, or Cognition of Semantic Relations. These "cells," or abilities, are in some way and to some degree related to academic performance, and one hopes for improved reading, spelling, or arithmetic, but the logical objectives to be derived from these tests are changes in the processes identified as deficient. There is inadequate evidence that teaching to underlying processes necessarily transfers to improved academic skills.

THE RATIONALE FOR AND AGAINST A LEARNING-ABILITIES APPROACH TO INTERVENTION

The SOI-LA test and curriculum system is actually a remediation system. It claims to identify areas of strength and weakness, and to provide a way to remediate the deficit or "disabling" areas. The strong areas become tools for improving the weak areas, or modes to make such work more palatable. The model is largely associated with gifted education, so one has to shift gears a bit to think in "remedial" terms. It may be helpful to put the concept into a broader view of remediation of learning disabilities.

Ysseldyke and Salvia have outlined the two major models of instructional intervention for remediation. Both are diagnostic-prescriptive, but they are based on very different views of remediation. They are the ability training (or process) model and the skill training (or task analysis) model. The ability training approach includes popular programs such as Frostig's visual perceptual program and the ITPA, a psycholinguistic test, which has a related training program, and the SOI model. Although the ITPA

is still widely used, particularly in speech therapy, and the Frostig is used, though less widely, reviews of the studies of these approaches have shown their results to be "unimpressive" and "unvalidated." (See, for example, Hammill and Larsen; Hammill, Goodman, and Wiederholdt). This is particularly true in the case of reading-related testing and intervention. (Arter and Jenkins). Some researchers have suggested that teaching learning strategies may be more important than teaching content, though such strategies vary in definition (e.g., Tulving).

The skills deficit view says that a child's nonperformance is the problem, and treats the disability with increased opportunity to learn, through direct teaching, the desired behaviors. This approach has been successful with low-performers. (See Haring et al.)

Multisensory approaches have some of each of these approaches and include methods developed by Fernald and Slingerland.

Where does SOI fit? As mentioned earlier, it is an abilities, or process model and its very name indicates that--a learning abilities test. As an instruction/prescription model, it is based on the belief that if disabling processes can be identified, they can be remediated. By this intervention, ultimately, performance should be improved in academic areas.

THE APPROPRIATENESS OF SOI FOR TARGET GROUPS

How does the SOI premise stand up for the three populations that might be involved in SOI: the gifted, the "normal range" children, and the handicapped? This researcher has detected no evidence that supports remediation of disabilities in high achieving students, perhaps because it is such a

novel idea. There is evidence, at least in the quasi-research of evaluation studies, that performance in the ability areas can be improved, but there is neither research nor convincing argument that a gifted child profits most from remediation rather than enrichment. However, other forms of remediation, such as task analytic teaching, are not being proposed here as alternatives, since evidence is lacking that viewing gifted education as a task in remediation is efficacious, whatever the style. In fact, research on giftedness indicates that such children do not always follow orderly sequences of learning; one wonders if forcing them to do so might prevent them from making "leaps of learning" that characterize giftedness. It can be appropriate, however, to analyze a learning goal when planning instruction for gifted children in terms of the skills that need to be acquired along the way.

Before "buying into" SOI as a vehicle for gifted programs, decision-makers should ponder whether they share the basic view that remediation of deficit abilities is appropriate gifted education.

For general classroom use, the SOI model has aspects that could positively influence the learning environment. Two nonprescriptive uses of the SOI model with classroom teachers are:

1. *A general "consciousness-raising" concerning various operations, content, and products*
2. *Teaching toward "general abilities" such as memory and evaluation, which all students could participate in to improve skills*

Viewing cognition and memory as operations that precede or support evaluation, convergent production, and divergent thinking is in keeping with

perspectives of other educational psychologists and seems an important reminder to teachers that different kinds of educational processes are involved in different academic tasks. Furthermore, analyzing teaching so as to assure that a child understands (cognition) and remembers (memory) before expecting higher level processes is in keeping with basic tenets of instructional design.

The attention to the figural, semantic and symbolic modes of instruction, incorporating some of the ideas of Bruner, reminds teachers that children may not respond to all content equally well, nor with equal interest. And the way the model organizes content, in a hierarchy of increasing complexity and abstractness, is consonant with research in teaching concepts, and with the approach to learning disabilities described previously as "skills teaching." A teacher thoroughly familiar with the SOI model should be a sophisticated diagnostician within the context of the normal curriculum--stepping back from classes to units, or from evaluation to cognition, for example, when children are having problems with a task.

If a regular classroom teacher wanted to teach toward "general abilities," the SOI curriculum can be taught in sets, organized by processes. In light of the research and analysis already discussed, this researcher's inclination is to be thoroughly critical of the curriculum, choosing only those activities which are closest to established goals. Activities would therefore be selected that "look the most like real curriculum," or that relate most closely to the themes and skills students are learning. Alternatively, the techniques and guidelines for teaching certain processes could be incorporated into the teaching of the regular curriculum, SOI activities

serving as models.

Another study related to specific instructional strategies (Hays and Periera) examines the effect of visual memory training on reading ability. The study is not necessarily impressive, as it deals with lessons and memory games which focus on pictures and objects rather than words, letters, or numbers. But the techniques used are worth citing, for they consist of teaching overt strategies for memorizing: improving attention, associating and classifying, visualizing, and verbalizing. Similarly, in spelling, rather than improving visual memory by doing non-spelling-related memory tasks, techniques just listed could be used to improve the study of spelling--that is, the memory of spelling words.

> *Using the SOI model as it is intended--that is, with a specific diagnostic-prescriptive program for each individual child--poses serious management problems in the regular classroom. The problems, in view of the unconvincing research on the usefulness of teaching underlying processes, may be greater than the promise. With specific profiles in hand, however, a teacher could look for commonalities in the class or within certain groups, and then adapt curriculum and teaching strategies to strengthen deficit areas. This might prove most powerful in the context of "real teaching" in reading groups, math, social studies, and other curricular areas.*

EXAMINING THE CLAIMS

The results of evaluations of SOI curriculum use are inconclusive.

The lack of convincing argument is largely attributable to the uncontrolled characteristics of evaluations in school settings--a problem all evaluators face, and one that precludes accepting most project evaluations as research. The SOI Institute has abstracts of many project reports available; almost all report positive results. However, most projects use as a criterion the improved performance on an alternate form of the SOI test. This pre and post testing on a particular test, with teaching of curricula directly related to the test, is common for evaluation of specialized curricula such as Frostig in perception. It is unconvincing, nonetheless, if there is not a strongly substantiated relationship between the abilities of skills tested and other criteria. SOI proponents seem to believe such relationships have been proven. More cautious educators might question the proof. Another rationale for accepting such claims as verification of worth is to say, "The model is so powerful, I trust its implications." Evidently many educators are willing to proceed on that basis, though it is not clear what appropriate outcomes of SOI use are, especially in the case of gifted education.

IMPLEMENTING THE CURRICULUM

> *Using the SOI model as it is intended to be used requires individual prescriptive profiles for each child. Deriving these profiles by hand is very time-consuming; with computer assistance, template-scored tests can yield bountiful information with greatly reduced time and effort.*

PLANNING THE INSTRUCTION

To make best use of the SOI diagnostic data, the institute says that a

teacher needs a specific profile on each child, identifying not only areas of weakness and strength, but combinations that will be best for the child's growth. In most instances, this means combining two strengths with a weak area, across the three categories of the model. This strategy is based on the reasonable assumption that a child doesn't feel good when facing deficits without strengths, and that it is easier to remediate weaknesses when they are combined with strengths. Task analysts would argue for breaking tasks down, to insure success, but it isn't known that this is appropriate at higher levels of learning. Deriving these prescriptions--called "trigraphs"--from the test is a major task. To do it by hand or calculator requires from 45 minutes to an hour, per child, with two sets of calculations between the scored test and the prescription. This time is in addition to the time it takes to administer the test. The second option is to feed the data into a computer. The Institute will produce computer-processed prescription profiles for a fee, or a district may purchase a computer disk for slightly less than $2,000. This price is for a microcomputer disk; for other computers the costs vary. If this route to instruction is taken, evaluation should focus on the trigraphs taught, which makes for a fairly complicated set of data in a major program evaluation, but of course it can be done.

Teachers who were interviewed indicated as much as half a day of someone's time is necessary to prepare data for the computer for one classroom. This time requirement is reduced considerably after the person learns how to do the preparation, however, and the time is much less than handscoring.

Another mode of instruction is to teach to "General Abilities." This can

be done with the sourcebooks from the Institute or by modifying instruction to fit the general ability categories. If the program is being implemented by a regular classroom teacher with no aide or resource teacher help, this seems the only feasible way to go, although some teachers are attempting to use trigraphs. When the whole burden of the program implementation falls to individual classroom teachers, however, "burnout" is a predictable result.

WHO AND WHERE

Basically, there are these choices in implementing or "delivering" SOI:

1. Teaching students in the regular classroom, by the classroom teacher. The teacher integrates the general abilities into the curriculum or sets aside periods of time in the week (three 20-minute periods are suggested by SOI people) for group work, or sets up an individualized program for trigraph prescriptions. This choice is certainly the most difficult but is the "purest" approach.
2. Using aides, whether in the classroom or in "pull out" periods. Aides are used to teach small groups selected because of common profiles, to monitor independent work, or to teach individuals.
3. Placing responsibility for implementation on a resource teacher. This special staff member may pull students out of the regular classroom for instruction or--especially in the case of older students--might manage packets and assignments, and monitor activities on an independent basis.

TRAINING THE TEACHERS

Teachers should have some training from certified or Institute-trained

personnel who may be district teachers who have attended advanced workshops held periodically throughout the country. Such training could be offered in several ways:

1. Through a college credit, district sponsored course held outside of school hours. If "free" credit is given, this provides a considerable incentive.
2. Through workshops offered in summer, during inservice week at the beginning of school, or on inservice days or other times during school hours. Workshops done on school time have the advantage of being "important enough to spend district time" but usually have the disadvantage of being very brief.

It seems to be a common phenomenon for a district to offer a "general awareness" workshop and then set up inbuilding inservice, squeezed into available hours after school or in staff meetings. Given the complexity of the system and the difficulty of organizing for its implementation, this latter approach seems risky. Another phenomenon which seems to occur fairly frequently is more spontaneous: a teacher goes to a workshop or conference and "falls in love" with SOI, comes back and asks for support in using it. Thus, an individual teacher may be solely responsible for SOI, or might try to solicit collaboration from other teachers. This can be a very good way to introduce, but a questionable way to implement SOI, for it places a huge burden on individual teachers, possibly resulting in use of the program without adequate training or preparation.

FACTORS INFLUENCING SUCCESS

Success is highly related to the commitment teachers have to the

program, evidenced by their willingness to take on new learning and new responsibilities, and the commitment the district has, evidenced in support and resources.

START UP TIME

The Institute urges districts considering SOI to give themselves at least half a year to get ready to use it. A whole year is probably more realistic since decisions and plans must be made for training, development of materials, testing and scoring options, delivery of curriculum, evaluation, and budgeting. Teachers who are highly enthusiastic might pilot aspects of the program, probably using a General Abilities approach, which serves the dual purpose of identifying "kinks" in the system, and "spreading the word" to other teachers. In this instance, a district might send one teacher from each building for training early in the planning year, provide sourcebooks and some release time for planning, while going ahead with the other myriad aspects of development of a program. Having teachers involved with SOI early should make planning more efficient and helpful.

STAFFING

This program works best if there are personnel who have major responsibility for it.

There needs to be a management-level person--curriculum coordinator, TAG coordinator, special projects director, or a very energetic principal--with time to be responsible for planning and implementing the program. A full time person is not necessary, although that is ideal for the first year, and the person selected should be someone other than a teacher. At the next level, the success of the program seems to be related to the

building resources available, notably the assignment of a resource teacher to the program, with responsibilities that may vary depending upon the delivery system chosen. The organization and availability of materials are also crucial. A whole building trying to work off of one sourcebook is going to have trying moments.

> *Teachers will be more likely to integrate SOI into classrooms if abundant materials are available and classified--games, workbooks, manipulatives, etc.*

Assuming there is to be a building depository of some kind, someone must be responsible for minding the store. The absence of this management function is the most common reason given for the failure of other highly materials-dependent programs such as SAPA or MACOS.

In short, the success of a program this complex is directly related to the commitment of resources, meaning dollar expenditures, which a district is willing to make. To put this premise in perspective, studies of effective innovative programs are helpful. The famous Rand Corporation Report (Berman and McLaughlin) found that government and school officials are generally over-optimistic about the time it takes to launch and sustain new program efforts. Their research indicates that it takes <u>two years</u> to get a project off the ground, <u>another two years</u> to implement a project, and <u>at least two more years</u> to produce a stable effect on student achievement scores. The study helps to explain why so little data are available on SOI: how many districts have had time to have done all this? Information about exemplary reading programs may be particularly relevant

(Berman and McLaughlin again, also Armor et al.). Programs that worked had strong components of teacher training and supervision, highly supportive administrators, especially principals, and tended to use teacher aides and specialists. Incidentally, the specialists for the most part acted as consultants, not as teachers. Another notable consideration in reading programs and other exemplary innovative programs: there was a real payoff in having local personnel "reinvent the wheel," working through all components of a program, including developing local curriculum. This process would be useful for SOI, too, since the SOI curriculum, in this researcher's opinion, is inadequate. It should be closely examined by educators considering its use. Conversely, those programs that had either top-down motivation (the central office wants it, but the teachers don't) or bottom-up motivation (teachers want it but the central office doesn't provide resources and staff services) did not last.

FACTORS INFLUENCING COST

> *It is impossible to estimate the cost of this program in a generic way, because districts' willingness or ability to commit resources will differ, and because there is such a range of options in using the program. Obviously, the scope of the program--gifted children only? regular classrooms?--the training, and the abundance of materials all affect cost.*

An excellent guidebook has been developed by the Sherwood School District in Oregon. The author, coordinator of an SOI gifted program considered successful, estimates for a class of 30 a cost from over $1,000 for the "Deluxe Option" which includes Educational Analysis with Curriculum

Prescription, computer assistance from the Institute, to a "Basic Option" which assumes the district handles all testing, scoring, and analysis, for approximately $600. Her explanations are detailed and would be valuable in planning. Of course, the SOI Institute also has a products catalog and will provide estimates for training, testing, and curriculum materials. Additionally, many commercial games and materials are useful. In several buildings where someone has already been trained, teachers are using SOI at "rock-bottom" cost:

ONE CLASSROOM

"ROCK-BOTTOM" ESTIMATE

Assuming a trained teacher and access to a computer with the SOI disk, or hand-scoring:

Basic Test, one form only	*30 @ $1.30*	*$39*
Basic and advanced sourcebooks	*9 @ $12*	*$108*
Exercise sheet sets	*4 @ $5.50*	*$22*
		$169

This estimate includes only a minimum of materials and does not address training expenses or personnel time for extra tasks such as scoring tests.

SOI users in one district reported that a half-time aide can manage materials adequately for a building; another district's staff claimed the program couldn't have succeeded without the full-time teacher assigned to the project.

To the cost factors listed previously, the expense of a skilled evaluator should be added to develop an evaluation plan and interpret results. There isn't any other way to know if efforts are worth the cost!

SOME FACTORS IN COST ESTIMATES

1. *Who will be trained? Where? How thoroughly?*
   - *Cost of attending Institute workshops*
   - *Cost of consultant to train in district*
   - *Number of days of inservice*
2. *What must be bought for how many classrooms?*
   (Refer to Sherwood Guide and Institute Catalog)
   - *Regular rooms at what grade levels*
   - *Special programs in classrooms or resource centers*
   - *Tests, sourcebooks, manuals, templates*
   - *Commercial games and materials*
3. *Who is involved in planning?*
   - *Planning time for coordinator, principals, key teachers*
   - *Cost of developing evaluation plans and materials*
4. *How are materials to be duplicated, coded, scored, retrieved?*
   - *Aide time, teacher time*
5. *How is project staffed?*
   - *Coordinator, aides, resource teacher*

6. *How will tests be scored and used?*
   - *Teacher or other's time for handscoring and developing prescriptions*
   - *Computer costs: microcomputer access, disk, or SOI Institute computer costs*

SOME ALTERNATIVES TO BUYING THE WHOLE LOAF

Limit the grade span of SOI use.

Provide testing and training but not curriculum; code and modify existing materials instead.

Use SOI as a general inservice tool and hope teachers expand their teaching repertoire.

Develop classroom group profiles and use them in modifying or supplementing usual instruction.

Times are hard. If a pencil and paper estimate of projected costs makes SOI look too expensive, a decisionmaker might consider following these suggestions for gaining some of the benefits without spending too much.

First, the grade span for SOI might be limited. In considering the limitations of the students' time and the available personnel, a district must also consider what other educational opportunities are to be made available. For example, in grades two and three, classroom teachers might focus on the General Abilities of Cognition and Memory, either by modifying existing curriculum or by using sourcebooks and set-aside time in the regular

classroom. Then grade three might provide an overlap or transition into Divergent Production, to be continued in grade four. In grades five and six, teachers could incorporate an emphasis on Evaluation into their regular instruction. Target children--identified children for a gifted program or a learning disabilities program--might work with a specific-prescription model, using trigraphs, and utilizing aides or resource teachers. This could be limited to two of the three intermediate grades. A different person or group could surely come up with many other permutations; the point is that learning could be broadened for all children, but only certain children would be given prescriptive training over a two year period.

A second option is to provide training and testing, but rather than buying or developing new curricula, code present curricula. When purchasing new materials, attempt to fill in the gaps. Initially this would be a big job, but once it was done it would be a matter of updating inventory and orienting new teachers as they come into the system.

The third option would be to use the SOI model as a means of raising the consciousness of teachers concerning their teaching, the curriculum, and the range of abilities of their students. This strategy may sound weak compared to putting a whole program into place, but it could in fact be powerful inservice. Many primary teachers, for example, do not understand the rationale for manipulatives and therefore don't use them. Here's an opportunity to provide new insight into the part spatial perceptions and spatial organization abilities play in developing higher mathematical ability. If emphases on "higher level thinking skills" haven't taken hold, or have palled, SOI's Evaluation abilities may open up the discussion again. And

for so many teachers who interpret creativity as art time, or as questions that begin, "What would you do if you were an elephant?", a new exposure to the divergent plane of intellectual abilities, with examples in math, spelling, reading, social studies and so on, might spark a new run on ideas. From this researcher's perspectives as a teacher, a consultant, and a professor, it seems that many teachers are not operating from a rational model of intelligence or learning. Why that is so is perhaps a subject for another lengthy paper; regardless of the reasons, here's an opportunity to give teachers operational definitions for reasonable components of a definition of intelligence.

A variation on this third option has had some success in several schools in the southern Oregon region. Teachers are given "awareness" training; at least one person in the building is given advanced training. The school uses the computer to draw up classroom profiles. With these in hand, the trained person can help classroom teachers understand patterns--or possible patterns--needing attention. For example, across a school where memory skills are low, there may be a need for a workshop on teaching rote skills such as arithmetic facts and spelling. If a fifth or sixth grade class shows very low evaluation skills, the teacher may want to incorporate a great deal more inquiry and problem solving into the curriculum, as these students face the increasing demands of secondary education. A particular classroom with a group of students who fare poorly in those subtests that indicate ability to understand complex instructions will need a teacher who can rethink the manner in which tasks are assigned and the strategies students have--or lack--for organizing and remembering components of a task.

The suggestions offered in this section are the researcher's; Meeker and her colleagues might choose to differ, for they obviously would like to see SOI used as they designed it to be used. But SOI seems to have many possible uses; perhaps what is really needed is divergent consideration of the possibilities!

PUTTING SOI INTO THE CONTEXT OF A TOTAL GIFTED PROGRAM

T A G ?

Define your terms!

EXPLORING PHILOSOPHY

The above admonition may seem simplistic, but it is easy to see how SOI could be bought--or "bought into"--to fill a vacuum. Many, many districts are still formulating "gifted" programs. If they rush to SOI, SOI defines their programs. This means the gifted program is defined as academically oriented, with an emphasis on abilities/skill training, particularly in deficit areas. Because of the effort required to implement SOI, it may also mean overlooking other aspects of talented and gifted programs--particularly talented individuals, children with strong leadership qualities, and possibly even students with very narrow but very great bands of giftedness (the math whiz). A clear statement of the goals and philosophy of a gifted program will allow those considering programs to ask: How does this fit into our view of giftedness? What parts of our needs does SOI fill? Do the proportionate costs fill proportionate needs?

The reader should be very briefly reminded of some educational considerations for the gifted, in the hope that these reminders may be helpful in

raising questions that must be answered before decisions regarding a new program are made.

Consider--or reconsider--the rationale for differential education (usually called "qualitatively different education"). Basically, that rationale hinges on two assumptions: first, that gifted children are themselves qualitatively different than other children, despite the many characteristics they share with others; and secondly, that what those children will grow up to become and do is also qualitatively different.

Given restricted or limited resources, this question must be asked: Is it worth the cost to provide special programs for special children who promise unique contributions as adults? Surely the answer is yes.

Still another question: Why has there been such resistance to identifying gifted children and providing education opportunities for them that recognize their uniqueness, and in so doing, identify them for others? This resistance to programs that "mark" the gifted child has resulted in an overwhelming insistence that the classroom teacher be provider of the main education of the gifted child. Such claims as, "It hurts gifted children to 'stand out,'" should be examined for documentation, being considered in light of what we do for handicapped children who, mainstreamed though they may be, are certainly identified and given special services. Secondly, the deep feeling that it is "undemocratic" to so identify gifted children might be opened for discussion again, remembering that wealthy gifted children who do not depend on public schools for their education certainly do get special services, that outstanding athletes are not only identified

but aggrandized. While these matters cannot be argued in depth here, it seems important to discuss such issues again in setting the parameters of a gifted program.

MODELS OF SERVICE TO GIFTED CHILDREN

The major models of service to gifted children have been: ability grouping, acceleration, and enrichment.

Ability grouping, or "tracking" has fallen into great disrepute, largely because of the arguments briefly mentioned above. One argument for ability grouping is that it provides gifted children an opportunity to interact with one another--to discover their "normality," to face greater challenge, and to have their environment altered for their needs. Large city districts which have developed special schools for performing arts, math, science, etc., seem to find them successful. Also, special summer programs and even Saturday workshops seem to be enthusiastically endorsed by parents and participants.

Acceleration is sometimes considered to be harmful to the developing child, yet educators in the mathematics field seem to speak almost with a unanimous voice that gifted young mathematicians should be moved along, at least in math, as far and as fast as they can go. Julian Stanley, Director of the Study of Mathematically Precocious Youth at John Hopkins University, in an incredibly interesting interview told of youngsters who are getting or will get their Ph.D.s from excellent universitites in their early twenties or even their teens. He estimates that there are around 400 such students in the country in each age year. (See Brandt). Although "everyone knows

that accelerated youngsters get messed up later," a review of the literature suggests that gifted children tend to be healthy, emotionally stable, and are frequently more mature across the board than their peers. There are variations on the acceleration of grade to grade, such as sending children from a grade school to the high school for certain courses, and this approach seems to be gaining popularity. Acceleration--in contrast to the SOI approach--teaches to the strengths of children.

Enrichment, the third model of service, may be defined in several ways. Ideally, the regular classroom teacher should be able to provide special, appropriate activities in the otherwise ordinary class. Given a gifted teacher, special materials, a small class, and a real commitment, this can work. What instead may happen, all too frequently, is that gifted children get to do more of the same in addition to what everyone else does, or go to the library, or do a great deal of extra drawing and reading. Individualizing is a considerable challenge, however much we say we want it.

An extension of the "teacher will do it" model is for special time and resources to be given to developing materials and procedures for independent projects for students. The projects can then be monitored by the classroom teacher. This seems an improvement on the first model, but it has the drawback of overemphasizing independent--sometimes isolated--time and activity for the gifted child who very much needs interaction with mentors and peers for emotional and intellectual reasons.

A more thorough and fairly well known model of enrichment is that of Renzulli. Incidentally, Renzulli is quite disdainful of process-oriented

curricula such as SOI because he feels it does not take the unique characteristics of gifted children into full account, and because he feels it lacks "context" for enrichment. His triadic model has three basic types of activities. Type I activities are exploratory, topics or experiences for exploration coming from both their own interests and the choices of teachers who are trying to broaden those interests. Such exploration can be media based (films, library materials, and so on) or experience based (field trips, visits with professionals, etc.). Type II activities are group training experiences, including games, exercises and simulation activities designed to increase the creativity and problem-solving abilities of children. SOI training could fit into this part of Renzulli's model. Type III activities, which are particularly suitable for gifted children, are those which involve children in "real" activities and investigations. Inquiry and problem solving call to use all of the kinds of skills introduced in Type II activities, as well as the special traits of gifted children, including superior intellect, leadership, creativity, curiosity, and persistence. These activities, as described by Renzulli, are collaborative rather than independent in nature; they involve several children working together in an investigation with the help of a teacher or other mentor. Some offshoots of this approach have included career opportunity programs for gifted secondary students, who spend part of their school time working closely with professionals in a field of interest. More typical would be children involved in investigations relevant to current local political, social, or cultural interests. The Southern Oregon Science and Humanities Symposium promotes Type III activities, as students are provided a forum for sharing the results of long range creative or research projects.

LAST WORDS

Whether SOI is right for a particular district depends largely on its philosophy of gifted education, and whether SOI "feels right." Anyone considering adopting SOI should examine its premises coolly before calling in its enthusiasts, for the SOI enthusiast is an evangelist. And the investigator, in the end, has to choose whether to grab hold of SOI and find out firsthand, or wait--how long?--for the critics to form a judgment. Either way has its risks--and its rewards.

RESOURCES

SOUTHERN OREGON

In order to update this brief listing, SORD invites districts to contribute information about additional resources as new programs are developed.

JACKSON COUNTY EDUCATION SERVICE DISTRICT

The SORD resource library has a collection of SOI materials: sample tests, the SOI technical manual, materials by J. P. Guilford and Mary Meeker, and relevant articles.

SOUTHERN OREGON STATE COLLEGE

The following books which explain the SOI theory and research are available in the SOSC library. They are listed also in the bibliography.

Guilford, J. P., The Nature of Human Intelligence

Meeker, M. N., The Structure of Intellect: Its Interpretation and Uses

SOI TRAINERS

Certified advanced SOI trainers in the southern Oregon area can be identified by contacting the SOI Institute. Ashland School District has several people who have had advanced training. Other districts have teachers who have been trained and are developing or maintaining model classrooms.

SOUTHERN OREGON DISTRICTS USING SOI

DISTRICT	ADMINISTRATIVE CONTACT	SCOPE OF USE
Ashland	Bill Moore Marvin Dunn Rose Marie Davis Wes Smith	In broad use. Component of gifted program and resource (ERC) rooms; increasing use in regular classrooms. Ashland uses computer, some aide and volunteer time.
Central Point	Burl Brim	In use in individual classrooms by trained teachers; no general district commitment.
Eagle Point	Art Phillips Sam Chimento	Used primarily in gifted program, including junior high level, but chiefly elementary. Using computer disk for prescriptions. Instruction responsibilities lie with TAG classroom teachers.
Medford	Glenn Hogen	Several teachers have had advanced training and are developing model classrooms as pilots. Some resource teachers are using test.
Phoenix-Talent	Richard Stebbins	A few teachers are trying to implement SOI in their classrooms. No district commitment at this time.

OTHER RESOURCES

SOI INSTITUTE (343 Richmond Street, El Segundo, CA 90245) (213) 322-5995

Publications:

A Beginner's Reader About J. P. Guilford's Structure of Intellect, M. Meeker

Way Beyond the IQ, J. P. Guilford

The SOI-LA Test and Technical Manual

Collected Readings

SHERWOOD PROGRAM

Publication by Jackie Buisman (School District 88J, 440 North Sherwood Blvd., Sherwood, OR 97140)

Structure of Intellect: Guidebook for Classroom Planning

ERIC

Guides are available through ERIC. If useful, they can be purchased from districts:

A Guide for Teaching Structure of Intellect in the Gifted Classroom, San Diego Schools ED 185 772

Creative Prescriptions Unlimited, East Whittier Schools ED 169 713, 169 714, 169 715, 169 716.

BIBLIOGRAPHY

Armor, D., Osegura, P., Cox, M., King, N., McDonnell, L., Pascal, A., Pauly, E. Analysis of the Preferred Reading Program in Selected Los Angeles Minority Schools. Los Angeles: Rand Corporation, 1976.

Arter, J. A. and Jenkins, J. Differential Diagnosis-prescriptive Teaching: A Critical Appraisal. University of Illinois. ERIC Ed 150 578.

Berman, P. and McLoughlin, M. W. Implementing and Sustaining Innovations (USOE), Federal Programs and Supporting Educational Change, Vol. VIII. Santa Monica, California: Rand Corporation, 1978.

Brandt, R. On Mathematically Gifted Youth: A Conversation with Julian Stanley, Educational Leadership, 1981, 39.

Cunningham, C. H., Thompson, B., Alston, H. L., and Wakefield, J. A. Use of SOI Abilities for Prediction. The Gifted Child Quarterly, 1978, 22,4:506-511.

Dyer, C. O., Neigler, C., and Milholland, J. E. Rater Agreements in Assigning Stanford-Binet Items to Guilford's Structure of Intellect Operations Categories. Journal of School Psychology, 1975, 13, 114-118.

Farnham-Diggory, S. Cognitive Processes in Education. New York: Harper and Row, 1972.

Guilford, J. P. The Nature of Human Intelligence. New York: McGraw Hill, 1967.

Guilford, J. P. Way Beyond the IQ. Buffalo, New York: Creative Education Foundation, 1977. (Available from SOI Institute).

Hammill, D. D., and Larsen, S. The Effectiveness of Psycholinguistic Training: A Reaffirmation of Position. Exceptional Children, 1978, 44:402-417.

Hammill, D. D., Goodman, L., and Wiederholt, J. T. Visual-motor Processes: Can We Train Them? Reading Teacher, 1974, 27:469-78

Haring, N. G., Lovitt, T. C., Eaton, M.D., Hansen, C.L. The Fourth R: Research in the Classroom. Columbus, Ohio: Charles Merrill, 1978.

Hays, B. M., and Pereira, E. R. Effect of Visual Memory Training on Reading Ability of Kindergarten and First Grade Children. The Journal of Experimental Education, 1972, 41, 1:33-38.

Holly, K. A., and Michael, W. B. The Relationship of Structure of Intellect Factor Abilities to Performance in High School Modern Algebra. Educational and Psychological Measurement, 1972, 32, 2:447-450.

Meeker, M. The Relevance of Arithmetic Testing to Teaching Arithmetic Skills. The Gifted Child Quarterly, 1979, 23, 2:297-303.

Meeker, M. The Structure of Intellect: Its Interpretation and Uses. Columbus, Ohio: Charles Merrill, 1969.

Meeker, M., and Meyers, C. E. Memory Factors and School Success of Average and Special Groups of Ninth-Grade Boys. Genetic Psychology Monographs, 83, 1971.

Piers, E. V., Daniels, J. M., and Quackenbush, J. F. The Identification of Creativity in Adolescents. Journal of Educational Psychology, 1960, 51:346-351.

Renzulli, Joseph S. The Enrichment Triad Model. Mansfield Center, Connecticut: Creative Learning Press, Inc., 1977.

Salvia, J., and Ysseldyke, J. E. Assessment in Special and Remedial Education. Boston: Houghton Mifflin Co., 1978.

Thompson, B., Alston, H. L., Cunningham, C. H., and Wakefield, J. A. The Relationship of a Measure of Structure of Intellect Abilities and Academic Achievement. Educational and Psychological Measurement, 1978, 38:1207-1210.

Tulving, E. Organized Retention and Cued Recall, The Journal of Experimental Education, 1968, 37:3-13.

Ysseldyke, J. E., and Salvia, J. Diagnostic-prescriptive Teaching: Two Models. Exceptional Children, 1974, 41, 181-186.

Zegas, J. A Validation Study of Tests from the Divergent Production Plane of the Guilford Structure of Intellect Model. Journal of Creative Behavior, 1976, 10, 3:170-188.

Southern Oregon Research and Development Committee (SORD) is a program offered by Jackson County Education Service District, Medford, Oregon.

Its members are local district teachers and administrators who meet once monthly to plan activities in four areas:

- Gifted and Talented
- Professional Development
- Research
- Projects Review (Incentive Grants)

Members of the Executive Committee, 1981-1982:

Ruby Whalley, (Phoenix-Talent), Chairman
Burl Brim, (Central Point), Chairman-Elect
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Jean Pope, (ESD), Executive Director

Art Phillips, (Eagle Point), Gifted and Talented
Larry Helms, (SOSC), Professional Development
Chuck Frisk, (Central Point), Research
Lee Cook, (Prospect), Projects Review

A description of SORD's objectives, activities, and projects is available on request from Jackson County ESD, 101 North Grape, Medford, OR, 97501.